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SUBJECT: EMBASSY REYKJAVIK SCIENCE FELLOW REQUEST 2009

1. (U) Post requests an Embassy Science Fellow to help strengthen the bilateral science research ties between the U.S. and Iceland. Embassy Reykjavik has designated the expansion of bilateral science ties as a key priority in our Mission Strategic Plan again this year. Post believes that enhanced ties in this area are of considerable importance in the bilateral relationship and will prove materially beneficial to both nations.

Post was disappointed not to be included in FY2008's program and hopes a match can be made for one fellow for the FY2009 program. We envision a fellow in one of the following areas (listed in priority order), although we suspect that any scientist in the renewable energy field would be welcome by an Icelandic institution:

- Starting Up a Renewable Energy Lab
- Extreme temperature and pressure engineering (dealing with superheated geothermal fluid in Deep Drilling)
- Utilizing low temperature by-product of geothermal power production
- Designing system for growing algae to produce biofuels
- Designing system for raising fish in heated power plant effluent

Renewable Energy Laboratory: Iceland has considerable expertise in the renewable energy fields of geothermal and hydropower and virtually all of their electricity and home heating is produced by renewable energy. The Icelandic government also acquired some top-notch facilities and real estate when U.S. Naval Air Station Keflavik closed in 2006. One of the institutions to grow out of the former base is the Keilir Atlantic Center for Excellence, which was formed as a collaborative effort of academic and local government, to provide technical education and eventually university programs. Keilir, with the support of the National Energy Authority and the Icelandic Innovation Center, wants to combine the existing renewable energy know-how with the existing buildings to create a renewable energy laboratory along same concept as the U.S. National Renewable Energy Lab in Colorado. Post feels that an expert in scientific administration issues -- specifically, founding a new institution and matching a vision statement with the resources at hand -- would help the Icelanders start their project, and would build on U.S. Dept. of Energy efforts in Iceland to date.

Extreme Temperature and Pressure Engineering: The International Deep Drilling Program is a multi-national geothermal energy project in Iceland that is drilling 5 kilometer deep wells to harness potential geothermal power predicted to be ten times the power harnessed at shallower depths. Among the issues the project faces are the high temperatures (240 to 350 degrees Celsius) for drilling, piping and instrumentation, as well as the scaling and corrosion in pipes and turbines from geothermal fluid. Post met with a visiting NASA engineer who mentioned that high temperature materials, coatings, and instrumentation technologies developed by NASA may be of use to this research effort. A science fellow in this field would considerably boost the project's chances for success and set the stage for productive follow-on collaboration.

Utilizing Low Temperature By-Product of Geothermal Energy Production: The Icelandic National Energy Authority (NEA) is

especially keen to expand the ways of squeezing all the energy out of one geothermal resource. Icelandic utilities are using both high and low pressure turbines, but the question is how to further utilize the 120 to 100 degrees Centigrade resource to maximize the benefits. Most of this energy is presently lost in the cooling tower, but the NEA wants to create "greater sustainability" by establishing other uses for this resource.

Aquaculture as a Byproduct of Geothermal Energy: Byproducts of geothermal power plants include a relatively pure carbon dioxide stream and warm water. One of Iceland's publicly owned water and power utilities is seeking to design a system to grow algae that digest the carbon dioxide emissions. The algae could be used to produce oils for a variety of uses, including biofuels or as food additives. The same utility is also seeking to design a system that uses the warm water effluent to farm fish. The utility has approached post to determine whether U.S. scientific expertise -- specifically in designing the systems to accomplish the goals of utilizing the power plant wastes -- might be available to further research in this field.

¶2. (U) Administrative details: No foreign language skills are necessary. It will be easier for post to provide housing for a Summer Fellow, but otherwise Embassy Reykjavik does not have a preference on timing. A minimum of six weeks is desired for the Fellow. Visitors staying less than 90 days do not need a visa to enter Iceland. A security clearance is not required for work.

¶3. (U) POC: Post's point of contact is Economic and Commercial Officer Fiona Evans. She can be reached at evansfs@state.gov and +354-562-9100, ext. 2295.

¶4. (U) Embassy Support: Although post has a very small housing pool, there is a slim possibility of some housing availability this summer. However, if a science fellow is available to support our first-priority project (founding of a renewable energy lab), post has a pledge of no-cost housing for the fellow from the Keilir Atlantic Center for Excellence in Keflavik. Housing at Keilir would be conveniently located to any of post's proposals and we are exploring the possibility of obtaining transportation support from the fellow's local sponsor. Post is committed to providing a work space and logistical support where possible. Due to post's tiny staff, we cannot provide in-country travel arrangements. These proposals have country team approval.

VAN VOORST